



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services

WinSystems Center Building

711 Stadium Drive, Suite 252

Arlington, Texas 76011



2-12-04-F-032

February 2, 2004

Allen Ryan
Department of the Army
Corps of Engineers, Tulsa District
1645 South 101st East Avenue
Tulsa, OK 74128-4609

Dear Mr. Ryan:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion on the Burlington Northern-Santa Fe Railroad's (BNSF) proposed railway bridge construction in Hemphill County, Texas, and its effects on federally-listed species in the proposed project area in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The proposed issuance of a Clean Water Act Section 404 permit by your agency to BNSF constitutes the Federal action applicable to this biological opinion. Your October 20, 2003, request for formal consultation was received on October 27, 2003.

This biological opinion is based on information provided in the biological assessment included with your original letter, telephone conversations of October, November and December 2003 with representatives from the consulting firm of Hanson-Wilson, Inc., field investigations, and other sources of information. A complete administrative record of this consultation is on file at our office.

Consultation History

July 15, 2003: Representatives from Burlington-Northern Santa Fe railroad (BNSF), Hanson-Wilson Inc., TranSystems Inc., the Tulsa District of the U.S. Army Corps of Engineers (COE), and the Service's West Texas Suboffice (WTSO) met at the request of BNSF to discuss proposed railway improvements across the Canadian River north of Canadian, Texas. John Hughes of the WTSO advised the group that the threatened Arkansas River shiner (*Notropis*

girardi) (ARS) is known to occupy the Canadian River within the project area. Representatives discussed the improvements at the proposed project site, and BNSF personnel indicated that they wished to pursue informal Section 7 consultation, as they did not anticipate placing permanent structures in the Canadian River channel.

- September 30, 2003: The United States District Court of the District of New Mexico issued an opinion on a Joint Motion to Approve Settlement Agreement (Docket No. 30) concerning the designation of critical habitat for the ARS. The court granted the Service's motion for a voluntary remand of the critical habitat and ruled that the current designation will be vacated during the interim.
- October 6, 2003: Allen Ryan (COE) informed John Hughes that BNSF had changed their construction plans, and that he had received a biological assessment for the revised project from Hanson-Wilson Inc., a contracting firm retained by BNSF. Mr. Ryan did not indicate that COE had made a determination of affect, nor did he request formal consultation with the Service. Mr. Ryan indicated that he had informed BNSF that they would need a Clean Water Act Section 404 permit if permanent structures were to be placed in the Canadian River channel, and that issuance of the permit entailed compliance with the Endangered Species Act.
- October 9, 2003: Biological assessment of the proposed BNSF railway bridge prepared by Hanson-Wilson Inc. received at the WTSO.
- October 14, 2003: Telephone conversation between Allen Ryan and John Hughes to discuss proposed action. Mr. Ryan was advised that COE needed to request initiation of formal consultation in writing due to the adverse affects to the ARS noted in the biological assessment prepared by Hanson-Wilson Inc.
- October 20, 2003: COE transmitted a request for formal consultation on the proposed BNSF railway improvement project.
- October 28, 2003: Telephone conversation between Rodger Anderson of Hanson-Wilson Inc. and John Hughes to discuss the draft biological assessment. Mr. Anderson was advised of the need for more detail regarding the placement of temporary machinery causeways in the river channel, and details regarding removal and relocation of any fish trapped during causeway construction. Mr. Anderson requested that a copy of the COE initiation letter be faxed to his attention.
- November 4, 2003: The Service's Arlington Field Office provided COE a response to the request for formal consultation and acknowledged the receipt of relevant information for the development of the Service's biological opinion.

- November 13, 2003: Electronic copy of a revised biological assessment sent by Mr. Rodger Anderson received at the WTSO.
- November 14, 2003: Hard copy of the revised biological assessment prepared by Hanson-Wilson Inc. delivered by Mr. Doug Dorsey to the WTSO.
- November 26, 2003: Electronic mail request by John Hughes to Mr. Rodger Anderson concerning construction procedures described in the revised biological assessment.
- November 28, 2003: Details concerning construction procedures sent to John Hughes by Rodger Anderson via electronic mail.
- December 2, 2003: Project site visit with Hanson-Wilson Inc. (Mr. Max Rexroad) and John Hughes to determine construction methods and proximity of proposed structures to the wetted channel of the Canadian River.

BIOLOGICAL OPINION

I. Description of Proposed Action

The BNSF railroad proposes to construct a new bridge over the Canadian River north of Canadian, Texas, as part of a larger railroad capacity improvement project along their transcontinental Los Angeles to Chicago railway. This project would require a Section 404 Clean Water Act permit from the COE. The proposed bridge would be located approximately 90 ft (27.4 m) upstream from an existing BNSF railroad bridge, and would be approximately 1,375 ft (419.1 m) in length.

The proposed action consists of the construction of the new bridge, including the erection of one pier (pier #5) below the ordinary high water mark (OHWM) of the Canadian River. One additional pier (pier #4) would be located approximately 25 ft (7.6 m) north of the OHWM on the north bank of the Canadian River. Temporary construction activities include the placement of two cofferdams and associated machinery causeways in the wetted channel of the Canadian River. Construction activities located within the OHWM will be divided into six major steps:

1. PortaDam™ temporary fluid impoundment structures will be placed in the Canadian River to create two sub-impoundments extending from the OHWM on each side of the river into the river channel. The sub-impoundments will provide a wall above the river's elevation that will remain intact during construction activities. The size of the north and south sub-impoundments will be approximately 809 ft² (74.4 m²) and 3,560 ft² (327.5 m²), respectively.
2. After the sub-impoundments are in place, two 10 meter bag seines with 1/8 inch mesh or smaller will be simultaneously hauled through each impoundment. Any fish captured will be immediately released downstream into the river. The seine hauls will be conducted in each impoundment until two consecutive hauls capture no fish.

3. After removal of all fish from the sub-impoundments, pumps will dewater each area to a level acceptable for the installation of a 30 ft (9.1 m) by 30 ft cofferdam. Markers (grade stakes and/or Tensar™ netting) will be placed at the bottom of each impoundment to delineate natural contours, and approximately 300 yd³ (229 m³) of native unconsolidated material will be placed and graded to establish level working areas. Sheet piling will then be driven into the working areas to form cofferdams. Approximately 40 2-inch (5.1 cm) PVC well points will be installed on the sides of the cofferdams and connected to a pump to dewater the cofferdams at the required depth to permit construction of concrete footings. Water will be pumped from the cofferdams to a stilling basin formed by a straw bale check dam, and then to a riprap outfall into the river below the existing railway bridge. Water discharge and sediment control, including the use of silt fences and traps, will be in accordance with the terms and conditions of Texas Pollutant Discharge Elimination System (TPDES) Permit No. TXR15000 and a site-specific Storm Water Pollution Prevention Plan (SWP3).
4. Support structures will be placed inside of the dewatered cofferdams as material is removed by backhoes. After excavation is complete, 25 H-piles will be inserted to a depth of approximately 90 ft (27.4 m) using a vibratory hammer. Concrete footings will be poured into the cofferdams, and steel will be tied to the footings in preparation for the construction of the pier stem sections. The stem sections will then be poured, and the joint between the stem and the footing will be sealed. Each cofferdam will be backfilled, the support structures removed, and finally water will be pumped inside to settle the material around the stem and footing. Water will be pumped out of cofferdams using the existing well points to accelerate drawdown, and the points and sheet piling will be removed after the material is sufficiently consolidated. Caps will then be placed on the top of each stem, and the bridge beams will be set after both caps are constructed.
5. The unconsolidated material forming each machinery causeway will be excavated after the bridge beams are set, and the original contours of the river channel and bank will be restored.
6. Each PortaDam™ will be removed to allow the areas to be re-inundated by the river.

The action area for the proposed action includes all of the area affected by the construction of the railway bridge where direct and indirect effects to listed species are expected to occur. This area extends from approximately 180 ft (54.9 m) south of pier #5 and 165 ft (50.3 m) north of pier #4, and outward from the bridge to all areas directly affected by construction activities and includes indirect effects to the Canadian River downstream of the bridge. A distance of 180 ft (54.9 m) from each pier was specified as a result of Natural Resources Conservation Service (NRCS) riparian buffer zone recommendations (NRCS 2002). Additional effects consist of anticipated erosion and increased sedimentation within the river resulting from ground disturbance and may be anticipated to occur a reasonable distance downstream during and following the completion of construction. Sediment loading in streams resulting from highway construction has been shown to influence turbidity 6.2 miles (10 km) downstream from the construction activity (Hainly 1980). Because the

Canadian River is naturally turbid and shallow, estimating the effects of sediment loading would be difficult; however, based on Hainly's (1980) study, these effects are expected to influence conditions within the river to a maximum of 6.2 miles (10 km) downstream of the bridge construction site. Additional indirect effects include post-construction erosion and sedimentation, inspection and maintenance of ground stabilization features following construction activities, and site preparation activities prior to stabilization of disturbed areas.

II. Status of the Species/Critical Habitat

Currently, there are 84 species listed in Texas including mammals, passerine birds, wading birds, shorebirds, birds of prey, a gallinaceous bird, reptiles, amphibians, fish, invertebrates, and plants. The term "listed species" means that a species has been federally-designated under the Act as either endangered (likely to be extinct on a short-term basis) or threatened (likely to be extinct on a long-term basis). In addition to listed species, 21 species in Texas have candidate status. Candidate species are currently being studied to assess the need to list them under the Act as threatened or endangered. Candidate species are not afforded Federal protection under the Act; however, we recommend that potential impacts to these species be considered during project planning. Avoiding impacts to these species now may prevent listing as threatened or endangered in the future. Species designated by individual states as threatened or endangered do not have Federal protection unless they also have been federally-listed.

After reviewing Texas' listed species for their aquatic status or dependence on aquatic habitat, the Service has determined that the species shown in the following table may be affected by the proposed action. Descriptions of critical habitat (when designated) for these individual species can be found in 50 CFR § 17.94-17.96. The Service finds no effect for listed Texas species not included in Table 1.

Table 1. Federally-listed (threatened or endangered) species in the action area that are associated with aquatic environments.

Common name	Scientific name	Status ¹	Classification ²
bald eagle	<i>Haliaeetus leucocephalus</i>	T	AD
interior least tern	<i>Sterna antillarum</i>	E	AD
Arkansas river shiner	<i>Notropis girardi</i>	T	FW

¹ Status: E = Endangered, T = Threatened

² Classification: AD = aquatically dependent species, FW = freshwater species

A. Species that may be affected by the proposed action

The bald eagle (*Haliaeetus leucocephalus*) is a large white-headed eagle that was initially listed March 11, 1967 as endangered under the Endangered Species Preservation Act of 1966. The species

was subsequently listed on February 14, 1978 under the Act as endangered without critical habitat in 43 of the lower 48 states and as threatened without critical habitat in the remaining five lower states (Michigan, Minnesota, Oregon, Washington, and Wisconsin). On July 12, 1995, the species was down-listed to threatened status in all lower 48 states and is currently proposed for de-listing (64 FR 36454). The species is generally found in forests and woodlands of east Texas and is more incidental in other parts of the state. Bald eagles usually nest in large trees located within one to two miles (1.6 to 3.2 km) of rivers or other large water bodies. In Texas, nesting usually occurs from October to July. Wintering migratory populations of bald eagles can occur in Texas east of Interstate Highway 35 (I-35) along large water bodies with large concentrations of waterfowl. Large lakes are possible wintering areas for eagles west of I-35. Although bald eagles most commonly eat fish, they also consume waterfowl, turtles, small mammals, and carrion.

The interior least tern (*Sterna antillarum*) is a small shorebird that was listed on May 28, 1985 as endangered but only for interior populations that occur beyond 50 miles (80 km) from the Texas Gulf Coast. Critical habitat has not been designated for the interior least tern. This species typically nests in colonies on sandbars or open flats of wide, shallow water bodies (rivers, reservoirs, etc.) or other bare areas with gravel or sand such as dredged islands or levee roads (USFWS 1990). Interior least terns arrive at their breeding areas along inland river systems from late April to late June and spend several months at their colonies. In Texas, interior least terns breed primarily along the Rio Grande, Canadian, and Red River systems. They also may breed in isolated areas such as mining ponds in central Texas. The birds winter along southern coastal areas in Central America or South America. The diet for these birds is small fish, which must be available locally from nearby water bodies.

The Arkansas River shiner (*Notropis girardi*) (ARS) was listed as threatened in November, 1998 (63 FR 64772). It is a small fish, with a maximum length of approximately 2-inches (51 mm) found in the Canadian River in New Mexico, Oklahoma and Texas. It occurs in turbid waters of shallow, primary channels of sandy streams and rivers in the Arkansas River drainage (Gilbert 1980). The ARS is a broadcast spawner, producing semibuoyant eggs which remain suspended by high flows until hatching (Moore 1944). Spawning begins in May and continues through July and may be associated with seasonal flooding that increases the flow within its habitat (Bestgen et al. 1989), although they are capable of spawning multiple times throughout the season under a variety of flow regimes (Bonner 2000). After hatching, larvae utilize backwater pools and areas at the mouths of tributaries where food is plentiful. The ARS's lifespan is thought to be less than three years in the wild (Moore 1944). The diet of the ARS includes mostly small insects and crustaceans.

In Texas, the ARS inhabits the Canadian River where suitable habitat exists, which includes Oldham, Potter, Hutchinson, Roberts, and Hemphill Counties. Critical habitat was designated for the ARS in April, 2001 (66 FR 18002) and includes Oldham, Potter, and Hemphill Counties in Texas. However, through a recent court settlement, the ARS critical habitat has been vacated pending the Service's remand (see Consultation History section). A recovery plan for the ARS has not yet been developed.

Historically, the ARS occurred throughout the western portion of the Arkansas River Basin in Kansas, New Mexico, Oklahoma, and Texas. Currently, the ARS is thought to exist only within approximately 508 miles (820 km) of the Canadian River in Oklahoma, Texas, and New Mexico. The primary reasons for the decline of the species' historical range includes inundation and modification of stream discharge by impoundments, channel desiccation from water diversion and groundwater pumping, stream channelization, and introduction of non-native species.

B. Analysis of species likely to be affected by the proposed action

The only federally-listed species likely to be adversely affected by the proposed action is the ARS. Adverse effects to the ARS are considered likely since it is (1) aquatic with habitat that is directly influenced by the proposed railway bridge construction across the Canadian River and (2) has been documented in the segment of the Canadian River affected by the proposed railway bridge construction. The bald eagle is not likely to adversely be affected by the proposed action since (1) there are no known nesting pairs of bald eagles in the Canadian River watershed according to information provided by the Texas Parks and Wildlife Department and (2) there is little habitat in the watershed for wintering populations of bald eagles except for relatively large water bodies such as Lake Meredith and Lake Marvin. The interior least tern is not likely to be adversely affected by the proposed action since (1) all known breeding colonies on the Canadian River are located outside of the proposed project's action area and (2) all construction activities are anticipated to be concluded prior to the arrival of breeding least terns in late April.

III. Environmental Baseline/Status of the Species within the Action Area

Under section 7(a)(2) of the Act, when considering the effects of the proposed action on federally-listed species, the Service is required to take into consideration the environmental baseline. The environmental baseline includes past and present impacts of all Federal, State, or private actions and other activities in the action area (50 CFR § 402.02), including Federal actions in the area that have already undergone section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in progress.

The ARS is known to inhabit the Canadian River within the action area from recent collections taken from the river at US 60/83. In 1990, samples taken at this site resulted in the capture of 59 specimens of ARS, representing 13.8% of the fish assemblage (Larson et al. 1991). Data collected from commercial bait harvest in 1990 includes the collection of 189 ARS specimens at the same site (Kraai, in litt. 1991). A total of three ARS specimens were collected within the action area in 1995 (Bonner et al. 1997). The most recent sampling effort within the action area failed to produce any ARS specimens (Giggelman et al. 2001). Despite the absence of ARS specimens from the river at US 60/83 noted in the most recent study, the ARS is thought to be a significant component of the fish assemblage within the reach of the river encompassing the action area, as ARS have been documented immediately upstream (Bonner and Wilde 2000, Giggelman et al. 2001) and

downstream (Larson et al. 1991) of the site, and the habitat is highly suitable for the species. The ARS is also believed to use this area during elevated spring flows on their way to upstream spawning sites (Cross et al. 1983, Bestgen et al. 1989, Bonner 2000).

Although reservoir construction is a significant threat to the ARS, the population remains stable on the portions of the Canadian River in Texas between the major reservoirs. However, these stretches of the river are subject to low flows and drought, which limit habitat availability. Low flow conditions may be exacerbated by the threat of excessive groundwater pumping in the general area.

IV. Effects of the Action

It is anticipated that ARS occupying the portion of the Canadian River within the action area would be adversely affected through the temporary loss of habitat, seining and handling of individuals, harassment from construction activity, and increased turbidity within the river.

Work within the river channel would consist of placement of temporary machinery causeways and cofferdams within the causeways. It is anticipated that the machinery causeways would be in place for a maximum of 113 days. This action would require the diversion of river water around the pier construction areas with temporary PortaDam™ structures and de-watering the areas. The total size of disturbance below the OHWM is approximately 0.100 acres (0.247 ha). The diversion of water and de-watering would displace ARS individuals in the area immediately upstream of the existing railway bridge. The habitat within the temporary machinery causeways would be removed from ARS access until the project is complete. Once the PortaDam™ structures are in place, representatives from Hanson-Wilson Inc., under the direction of at least one qualified fisheries biologist, would seine within the impounded areas to remove any fishes, including ARS, that may be trapped. Fish removed from impounded areas would be immediately released into the river downstream of the construction site.

The Canadian River varies in turbidity, with increases occurring during high flow and significant precipitation. The effects to the aquatic biota of streams resulting from highway construction has been well documented (Barton 1977, Wellman et al. 2000, Barrett et al. 1995). Native fish within the river, including the ARS, are adapted to survival in the shallow turbid water typical of prairie streams (Bonner and Wilde 2002, Robison and Buchanan 1988). Since sources of turbidity related to construction would not occur during the ARS peak spawning season, adverse effects from increased turbidity are anticipated to be relevant to sediment plumes from intense construction activity, food availability and feeding. The ARS can effectively locate food in turbid conditions, in fact, intermediate turbidity may enhance prey detection (Boehlert and Morgan 1985), however; food consumption decreases under high turbidity (Bonner and Wilde 2002). Adverse effects to aquatic macroinvertebrates resulting from increased sediment load would also be expected to reduce food availability for the ARS (Henley et al. 2000, Hynes 1976). However, these effects may be negligible (Wellman et al. 2000) and only short-term due to the expected recolonization of invertebrates to the affected area (Barton 1977). Additionally, recent studies have found that

terrestrial and semiaquatic invertebrates make up a significant portion of the ARS diet (Jimenez 1999).

ARS within the action area would also be affected by the activity related to the construction of the railway bridge including the use of equipment, temporary storage of materials, foot and vehicle traffic, installation of erosion and sedimentation controls, and incidental fallback of debris into the river. The immediate area receiving increased sediment loads may also inhibit fish from using the area immediately downstream of the bridge (Barton 1977). This increased activity is expected to harass the ARS occurring within the action area and potentially harm them by limiting access to habitat and disrupting migration and/or seasonal movements within the river.

Indirect effects anticipated from the proposed action are erosion, increased sedimentation, and increased turbidity within the river following the completion of the railway bridge. Additionally, some indirect effects may occur from the maintenance and removal of erosion and sedimentation controls utilized at the construction site. Inspection and maintenance of erosion and sedimentation control devices would occur post-construction until disturbed areas have become stabilized to match existing vegetative cover in the area. The contractor would make repairs to damaged or ineffective controls as soon as possible.

V. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The identified cumulative effects reasonably certain to occur within the action area are flow depletion due to excessive groundwater pumping, off-road vehicle (ORV) use within the river channel and riparian area, introduction of baitfish from anglers, and potential spillage of hazardous waste from additional railroad shipments. Groundwater downstream of Lake Meredith moves toward the Canadian River, where it eventually discharges as spring flow into the river or seeps into alluvial deposits. The potential exists for groundwater depletion to affect streamflows in the action area, as several area landowners have expressed interest in selling their water rights to municipalities outside of the area (Janet Guthrie, Hemphill County Underground Water Conservation District, pers. comm.). The threat to ARS from the introduced Red River shiner (*Notropis bairdi*) from anglers and commercial bait harvesters within the ARS's range has been documented (Cross et al. 1983, Felley and Cothran 1981), although this species has not been reported from the Canadian River in Texas. Because public access is currently available via county-owned lands adjacent to the action area, the potential for anglers to use the river for recreation and introduce non-native species exists; however, this potential effect is difficult to predict or quantify. The public access to the river also exacerbates the effect of recreational ORV use within the river channel. The extent of the effects of ORV use within the river channel on the ARS is not currently known. Due to increases in railway traffic

caused by BNSF's capacity improvements, the potential exists for hazardous waste spills that could harm the ARS; however, the magnitude of this potential effect is also unknown and is difficult to predict or quantify.

VI. Conclusion

The ARS is known to occur in most portions of the Canadian River in Texas and populations are thought to be stable. The proposed action will not impose a physical barrier to ARS occupying the river within the action area, but individuals may be deterred by activity related to project implementation. Take related to the immediate area affected by construction is likely only to temporarily affect the local population.

After reviewing the current status of the ARS, the environmental baseline for the action area, the effects of the proposed railway bridge construction, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the ARS.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the COE so that they become binding conditions of any grant or permit issued to BNSF, as appropriate, for the exemption in section 7(o)(2) to apply. COE has a continuing duty to regulate the activity covered by this incidental take statement. If COE fails to assume and implement the terms and conditions or fails to require BNSF to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, COE or BNSF must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(3)].

Amount or Extent of Take Anticipated

The Service anticipates the local population of ARS within the Canadian River could be taken as a result of the proposed action, however, it will be difficult to accurately predict due the nature of the take and biology of the species. Therefore, take will be assessed based on the temporal description of activities expected to affect the species as noted in the biological assessment and using habitat area as a surrogate for the species. The incidental take is expected to be in the form of harassment, wounding, and/or killing. Harassment related to construction activities is anticipated to occur during intense construction activity and during seining and handling of fish during dewatering of impounded areas. Take in the form of wounding and/or killing is expected during seining and dewatering of impounded areas.

The Service believes harassment related to intense construction activity is reasonably certain to occur for those activities involving ground disturbance in close proximity to the river channel. The biological assessment identifies these activities as the placement of temporary machinery causeways within the channel, which would be scheduled for a maximum of 113 days. Thus, take of the local population of ARS from harassment related to intense construction activity will occur for a maximum of 113 days. The seining and dewatering of impounded areas is estimated to take the individuals trapped within the impounded areas, which are not to exceed a combined total of 0.100 acres (0.247 ha) in size.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of ARS:

- 1) The removal of water and fish from impounded areas will be accomplished immediately following completion of the impoundments and under the supervision of a qualified fisheries biologist. Seines used will be 1/8-inch mesh size or smaller to allow collection of juvenile fish. Seine hauls will be used within the impounded areas until all fish are removed and returned to the river. Impounded areas will immediately be re-seined should water flow over the PortaDam™ structures.
- 2) The construction of water diversions, seining and dewatering of impounded areas, and placement and removal of machinery causeways below the OHWM will be scheduled outside of the ARS peak spawning season (May-July). Impounded areas will be minimized to the maximum extent practical to perform work.

- 3) Vehicle or other motorized equipment use will be restricted to outside of the wetted channel of the Canadian River. Equipment and motorized vehicles will not be allowed below the OHWM, with the exception of activity occurring on the machinery causeways.
- 4) After the removal of unconsolidated aggregate from the impounded areas, the natural contours of the river channel and bank will be restored to the maximum extent possible.
- 5) Enhanced erosion control and sedimentation barriers will be strategically placed within the action area. In addition to the best management practices for sedimentation and erosion control specified in TPDES Permit No. TXR15000 and the site-specific SWP3, additional silt fencing will be installed along the banks of the river upstream and downstream from the bridge within BNSF right-of-way to reduce sediment loading. Compost berms will be used to trap sediment from construction and will be maintained until 70% of vegetative cover from existing conditions is achieved.
- 6) Immediately following completion of the project, disturbed areas will be revegetated with a native seed mix and managed to ensure that 70% cover from existing condition is achieved. The seed mix used for revegetation will include the following:

- Eastern gamagrass
- Prairie cordgrass
- Indiangrass
- Switchgrass
- Sand bluestem
- Canada wildrye
- Illinois bundleflower
- Eastern cottonwood (100 pole plantings interspersed within the action area)

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the COE must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

- 1) The contractor(s) employed for the proposed work will attend a pre-construction meeting which will include specific instruction on the implementation of the reasonable and prudent measures included in this incidental take statement.
- 2) Instructions specific to the contractor(s) related to implementation of the reasonable and prudent measures will be incorporated through written documentation within the project plans.

- 3) COE, or its appointed representative, will monitor the extent of take through sufficient on-site inspections scheduled for activities anticipated to result in take through the duration of the action. Monitoring will include the following:
 - a) estimating size of impounded areas within the channel following completion of the impoundments,
 - b) pre-construction inspection of erosion and sedimentation controls and post-construction inspection once a month or following precipitation of ½ inch or more (whichever occurs first),
 - c) monitoring duration of intense construction activity (i.e., construction and removal of machinery causeways within the channel),
 - d) reporting approximate number of fish (all fish collected by seining) removed from impounded areas,
 - e) maintaining effectiveness of erosion and sediment controls post-construction until disturbed areas have become stabilized, and
 - f) reporting approximate area of ground disturbance and impact to the Canadian River riparian area.
- 4) During seining and dewatering activity, any dead or mortally wounded fish will be salvaged by placing them immediately in a 70% ethanol solution and ensuring that they are sent to the WTSO for disposition.
- 5) Reports of on-site monitoring of the proposed action will be submitted to the WTSO as follows:
 - a) following the completion of the anticipated impounding, seining, and dewatering activities,
 - b) following any additional impounding, seining, and dewatering activities which may be necessary due to changes in river flow,
 - c) following any re-seining of impounded areas which may be necessary due to water overflow, and
 - d) following completion of the full project.

This concludes formal consultation on the action outlined in the biological assessment. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1)

the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Cloud", written in a cursive style.

Thomas J. Cloud, Jr.
Field Supervisor

cc: Rodger Anderson, Hanson-Wilson Inc., Springfield, IL
Regional Director, FWS, Albuquerque, NM (Attn: ARD-ES)
State Administrator, FWS, Ecological Services, Austin, TX.

LITERATURE CITED

- Barrett, M. E., J. F. Malina, R. J. Charbeneau, and G. H. Ward. 1995. Effects of highway construction and operation on water quality and quantity in an ephemeral stream in the Austin, Texas area. Center for Research in Water Resources, University of Texas, Austin.
- Barton, B. A. 1977. Short-term effects of highway construction on the limnology of a small stream in southern Ontario. *Freshwater Biology* 7:99-108.
- Bestgen, K. R., S. P. Platania, J. E. Brooks, and D. L. Propst. 1989. Dispersal and life history traits of *Notropis girardi* (Cypriniformes: Cyprinidae), introduced into the Pecos River, New Mexico. *Am. Midl. Nat.* 122(2):228-235.
- Boehlert, G.W. and J.B. Morgan. 1985. Turbidity enhances feeding abilities of larval Pacific herring, *Clupea harengus pallasii*. *Hydrobiologia* 123: 161-170.
- Bonner, T.H. 2000. Habitat use and ecology of prairie stream fishes in the Canadian River, New Mexico and Texas. Doctoral dissertation. Texas Tech University, Lubbock.
- Bonner, T.H. and G.R. Wilde. 2000. Changes in the fish assemblage of the Canadian River, Texas, associated with reservoir construction. *J. Fresh. Ecol.* 15:189-198.
- Bonner, T.H. and G.R. Wilde. 2002. Effects of turbidity on prey consumption by prairie stream fishes. *Trans. Am. Fish. Soc.* 131:1203-1208.
- Bonner, T. H., G. R. Wilde, R. Jimenez, Jr., and R. Patillo. 1997. Habitat use and ecology of the Arkansas River shiner and speckled chub in the Canadian River, New Mexico and Texas. Annual Rept. submitted to U.S. Fish and Wildlife Service by Texas Tech University. Lubbock, TX.
- Cross, F.B., O.T. Gorman and S.G. Haslouer. 1983. The Red River shiner *Notropis bairdi* in Kansas with notes on depletion of its Arkansas River cognate, *Notropis girardi*. *Trans. Kans. Acad. Sci.* 86:93-98.
- Felley, J.D. and E.G. Cothran. 1981. *Notropis bairdi* (Cyprinidae) in the Cimarron River, Oklahoma. *Southwest. Nat.* 25:654.
- Giggleman, C.M., O.R. Bocanegra, M.P. Armstrong, and J.M. Lewis. 2001. The impact of anthropogenic discharges on Arkansas River shiner (*Notropis girardi*) habitat within the South Canadian River watershed in the Texas Panhandle, Texas 2001-2002. U.S. Fish and Wildlife Service, Arlington, Texas.

- Gilbert, C. R. 1980. *Notropis girardi* Hubbs and Ortenburger, Arkansas River shiner. p. 268 in D.S. Lee, C.R. Gilbert, C.H. Hocutt, R.E. Jenkins, D.E. McAllister, and J.R. Stauffer, Jr. Atlas of North American Freshwater Fishes. N.C. State Mus. Nat. Hist., Raleigh, i-x +866 pp.
- Hainly, R. A. 1980. The effects of highway construction on sediment discharge into Blockhouse Creek and Stream Valley Run, Pennsylvania. U.S. Geological Survey Water Resource Investigation 80-86.
- Henley, W.F., M.A. Patterson, R.J. Neves, and A. Dennis Lemly. 2000. Effects of sedimentation and turbidity on lotic food webs: a concise review for natural resource managers. Reviews in Fish. Sci. 8(2): 125-139.
- Hynes, H. B. N. 1976. The ecology of running waters. Univ. of Toronto Press, Toronto. 555 pp.
- Jimenez, R., Jr. 1999. The food habits of the Arkansas River shiner and the speckled chub. Unpublished M.S. Thesis, Texas Tech University. Lubbock, Texas. 95 pp.
- Kraai, Joe. 1991. In litt. Commercial minnow seining data compiled for unpublished study on effects of seine size on fisheries and economics of bait harvest industry. Texas Parks and Wildlife.
- Larson, R. D., A. A. Echelle and A. V. Zale. 1991. Life history and distribution of the Arkansas River shiner in Oklahoma. Job No. 1: Status of threatened and endangered fishes in Oklahoma June 1, 1989 through August 31, 1991. Final Rept., Federal Aid Proj. No. E-8. Okla. Dept. Wildl. Cons., Oklahoma City. 94 pp.
- Moore, G. A. 1944. Notes on the early life history of *Notropis girardi*. Copeia 1944:209-214.
- NRCS. 2002. Criteria for planting riparian buffers, CP 22. 3pp.
- Robison, H.W. and T.M. Buchanan. 1988. Fishes of Arkansas. University of Arkansas Press, Fayetteville.
- USFWS. 1990. Recovery plan for the interior least tern (*Sterna antillarum*). U.S. Fish and Wildlife Service, Twin Cities, MN. 91 pp.
- Wellman, J. C., D. L. Combs, and S. B. Cook. 2000. Long-term impacts of bridge and culvert construction or replacement on fish communities and sediment characteristics of streams. J. Fresh. Ecol. 15(3): 317-328.

PERSONAL COMMUNICATIONS

- Guthrie, J. 2003. Hemphill County Underground Water Conservation District, Canadian, TX.